Innovate UK

Results of Competition: **Infrastructure Systems Round 3 - 13-24 Months**

Competition Code: **1707_INFRA_R3_24M**

Total available funding is £5,522,608

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
CISCO INTERNATIONAL LIMITED	100CC - The 100% Connected Community	£535,256	£267,628
BRONZE SOFTWARE LABS LTD		£293,218	£205,253
GDS DIGITAL SERVICES LIMITED		£198,026	£138,618
St Edmundsbury Borough Council		£178,935	£178,935
Suffolk County Council		£121,104	£121,104
University Campus Suffolk		£115,309	£115,309

Project description - provided by applicants

100CC will provide a connectivity platform that digitally includes the most vulnerable. By combining multiple services (healthcare, social care, communities and families services) on a single connectivity infrastructure 100CC will demonstrate how an orchestrated approach delivers wellbeing and business outcomes. This will improve quality of life and wellbeing outcomes for the individual while significantly reducing the cost of public service delivery. The project is tackling a genuine and stubborn societal need: bringing digital inclusion to the most disadvantaged. Some public services are fully digital (car tax renewal), but others have had mixed results (housing benefit reform, Universal Credit), or are still developing (social care remote monitoring). This is unequal because access to digital services is predicated on digital literacy and broadband access at home. Disadvantaged communities are high-volume public service users, but have benefitted the least from the shift to digital services. Too many legacy service users and barriers to end-users' digital adoption exist. 100CC will address the challenge by demonstrating a fit-for-purpose connectivity platform in the home for high-volume, heterogeneous public service user groups. This demonstration will validate a 'provider pays' business model, where the cost of providing secure connectivity is an order of magnitude lower than currently provided by the market. The deployment in West Suffolk will then demonstrate a citizen-centric digital service delivery model that uses IoT, real-time collaboration, digital-enabled staff and a fully online citizenry, transforming the State-of-the-Art from apps and online services to a fully-digital public service experience.

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SPAN ACCESS SOLUTIONS LTD	Offshore Wind - Blade Access System and working Environment (BASE) Project	£540,894	£243,402
ICENI MARINE SERVICES LIMITED		£89,597	£40,319
OFFSHORE RENEWABLE ENERGY CATAPULT		£108,092	£108,092
The Robert Gordon University		£24,228	£24,228
TURNER ACCESS LIMITED		£47,541	£16,639
University of Dundee		£17,781	£17,781

Project description - provided by applicants

The Blade Access System and working Environment (BASE) project will contribute to a 0.6% reduction in the Levelised Cost of Energy (LCoE) from offshore wind by reducing turbine downtime associated with blade maintenance and improving the quality of blade repairs and performance upgrades. The project partners - Span Access, Turner Access, ICENI Marine Services, Offshore Renewable Energy (ORE) Catapult, Dundee University and Robert Gordon University -- will develop and demonstrate an innovative technology which improves safe and efficient access to wind turbine blades for blade technicians, and creates a more stable working environment for undertaking maintenance which in turn will facilitate a better quality of blade repair. Span Access will lead the project and will collaborate with the partners to optimise their patented TechniSpan technology for the challenge of offshore wind turbine blade access. A prototype BASE unit will be developed and be demonstrated at ORE Catapults 7MW demonstration offshore wind turbine in Levenmouth, Fife. This will be an excellent illustrate of the challenges of working at height on offshore assets where blades which are typically from 50 -- 100m in diameter and 90 metres above the sea.

Note: you can see all Innovate UK-funded projects here
https://www.gov.uk/government/publications/innovate-uk-funded-projects Use the Competition Code given above to search for this competition's results

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VIVID ECONOMICS LTD	Urban Greenspace Valuation Toolkit	£513,347	£359,343
BARTON WILLMORE LLP		£389,217	£194,609
University of Exeter		£296,081	£296,081

Project description - provided by applicants

Green infrastructure, such as parks, greenspaces, and other environmental features such as trees and canals, are important in urban areas for quality of life and health, and also provide space for wildlife, absorb rainwater and remove harmful air pollutants. A range of public and private sector asset owners and managers, from Local Authorities to private developers, have identified a gap in terms of practical appraisal and valuation tools to inform the business and policy case for urban greenspace investments. Without improved cases, green infrastructure is not given enough weight in decisions and is under-provided. This project addresses this gap by supplying a web-based tool delivering appraisal and value information into business investment and policy decisions, with outputs tailored to users of the tool. It combines the rigour of academic research on green space with a robust and transparent methodology for evaluating the economic value of these spaces. The project focuses on the integration of existing planning tools, economic impact and valuation of green infrastructure for public and private users. It pilots the toolkit with public sector and development organisations to prove that the tool is fit for purpose. Although there are valuation methodologies for several attributes of urban greenspace, there is currently no comprehensive toolkit through which land owners and/or planners can understand how these spaces are used, their impact and economic value. Existing methodologies are inaccessible and dispersed. A structured presentation of the impacts and economic value of green space assets enables decision makers to compare investment, operational and funding options before them. Furthermore, there will be innovation by incorporating location-specific information on use and socioeconomic characteristics, giving greater local insight than has previously been available.

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DONCASTERS LIMITED	Leading Edge For Turbines (LEFT)	£444,240	£222,120
OFFSHORE RENEWABLE ENERGY CATAPULT		£292,630	£292,630
PERFORMANCE ENGINEERED SOLUTIONS (PES) LIMITED		£271,006	£189,704
Project description - provided by applicants			
This project aims at maturing to TRL 5 a game changing erosion protection solution for large offshore wind turbine blades utilising a technology currently produced for the aerospace industry, namely that of the metallic lifetime erosion protection shield. In order to integration this solution in large 80m+ 30ton+, highly flexible wind turbine blades with 30 year design lifetime, the following key challenges are addressed in the proposal: - modulating the erosion shield material for this demanding application, - modelling and validating the attachment solution between the metallic shield and the blade up to TRL 5 (adhesive characterisation, subcomponent test, leading edge component test)			

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UNIT 9 LIMITED	PROVIT - Planning Requirements Optioneering Visualisation Investment Tool	£333,458	£200,075
BUILDING RESEARCH ESTABLISHMENT LIMITED		£120,566	£120,566
CARTOCONSULT LIMITED		£187,986	£131,590
Hampshire County Council		£52,954	£52,954
SKANSKA TECHNOLOGY LIMITED		£114,636	£57,318
University of Cambridge		£0	£0

Project description - provided by applicants

Cities throughout the world face long-term strategic challenges in delivering large-scale physical infrastructure development whilst addressing social and economic changes and challenges. In delivering such major programmes efficiently and effectively it is essential that investment decisions are thoroughly assessed and their impacts properly understood. Decisions need to be taken not only in the context of the specific development area but also that of the wider city, and over the long term. Decision makers need to take account of high-level factors such as changing demographics, political, economic and sustainability drivers, advances in technology etc. They need to understand and react to impacts on existing infrastructure and services, environment and economy as well as social impacts such as health and wellbeing of residents, workers and visitors. Currently 'city systems' are often siloed and, as a consequence, investment decisions can fail to recognise that the city is more than the sum of its parts, potentially leading to errors in infrastructure development that can take decades to correct. PROVIT will address this challenge by developing an investment simulation and optioneering platform that enables decision makers to create urban investment scenarios, interactively assess their impact on the operation of existing systems and established KPIs, and modify the scenarios in order to create an optimised solution. **PROVIT** works by standardising the contribution of elemental insights from different data and model sources subject to a spatial context. We look to rely on the augmented visualisation of rich data. Visualisation of data is selected for its ability to focus consensus between stakeholders and allow optioneering different scenarios each on their mobile devices to gather specific views from each in connection to different specific data insights. PROVIT will build on the recent Innovate UK-funded VISUALISE project which supports effective, efficient management of physical infrastructure assets by integrating, validating and analysing data from discrete asset systems, BIM approaches and emerging 3D mapping enabled by GIS. PROVIT is led by UK SME UNIT9, supported by complementary SME Cartoconsult and other organisations looking to develop innovative IT-based solutions supporting improved data management, decision-making and service delivery in the built environment. Skanska and Hampshire CC (as well as others in a stakeholder group) will participate as representative end users; the potential market is global and opportunities for overseas sales will be considered throughout. Research providers BRE and the University of Cambridge will provide access to an initial pool of predictive urban system models.

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SCHNEIDER ELECTRIC LIMITED LANITRON LIMITED University of the West of England	Holistic Digital Solution (HDS) for secure and affordable Building Management Systems (BMS)	£1,259,999 £280,000 £660,001	£630,000 £196,000 £660,001
Project description - provided by applicants			

Building Management Systems (BMS) are computer-based systems that monitor and control electro-mechanical functions in facilities (hospitals, airports, universities, shopping centres, public buildings, etc.) easing the day-to-day management. BMS can incorporate Internet of Things (IoT) assets (i.e. a collection of sensors and electronic devices connected to the web), which help to improve the efficiency of the facility. BMS are exorbitantly priced and are only employed by large facilities that can afford the initial investment. BMS do not fully provide IoT-enabled intelligent capabilities such as predictive maintenance (e.g. to predict when machinery needs repair) and prescriptive operational plans. Also, BMS has not been developed with cyber-security in mind which makes them vulnerable to attacks that can drastically disrupt their building operations. This project will develop a Holistic Digital Solution (HDS) for secure and affordable BMS. The project will (i) significantly reduce the time required to develop IoT-enabled BMS, thus reducing their development cost and increasing their affordability, (ii) leverage Big Data Analytics and Machine Learning techniques (e.g. deep learning) to enable predictive maintenance and optimised operations, (iii) reduce the time and effort required for technicians to carry out inspection and maintenance tasks; by guiding technicians through the facility and directing them to the specific equipment. It will also provide the technicians with all the information required to carry out their job, (iv) use attack-models and Machine Learning to carry out cyber-security vulnerability audits to improve the robustness of the BMS. _Keywords_: Internet-of-Things, Augmented Reality, Big Data Analytics, Deep Learning, Cyber-Security.